Studi Pengaruh Konsentrasi Minyak Esensial Akar Wangi (Chrysopogon zizanioides (L.) Roberty) Komersial terhadap Viabilitas Sel HeLa menggunakan Metode WST-1 dan Scepter Cell Counter = Study of Concentration Effect of Commercial Vetiver (Chrysopogon zizanioides (L.) Roberty) Essential Oil on HeLa Cell Viability using WST-1 and Scepter Cell Counter Methods

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Abstrak

Kanker serviks merupakan kanker dengan jumlah kasus tertinggi kedua di Indonesia. Banyaknya jumlah kasus kanker di Indonesia serta kasus kematian akibat kanker menyebabkan diperlukannya pengembangan obat-obatan untuk menyembuhkan kanker. Pengobatan yang ada dinilai cukup efektif tetapi memiliki beberapa efek samping yang berbahaya, sehingga diperlukan juga pengembangan obat antikanker dari bahan-bahan alami seperti ekstrak tumbuhan. Minyak esensial akar wangi memiliki potensi antikanker, akan tetapi pengaruh konsentrasi minyak esensial akar wangi perlu diteliti. Tujuan dari penelitian adalah untuk mengetahui pengaruh variasi konsentrasi minyak esensial akar wangi terhadap sel HeLa. Sel HeLa diberikan empat perlakuan dengan variasi konsentrasi (5 µg/mL, 10 µg/mL, 15 µg/mL, dan 20 µg/mL) minyak esensial akar wangi dan dilakukan pengulangan sebanyak lima kali. Viabilitas sel diuji menggunakan WST-1 dan Scepter cell counter. Nilai viabilitas pada metode WST-1 dihitung berdasarkan nilai absorbansi, sedangkan nilai viabilitas pada metode Scepter cell counter dihitung berdasarkan ukuran diameter sel. Semakin tinggi nilai absorbansi, maka semakin tinggi juga nilai viabilitasnya. Untuk ukuran diameter, sel HeLa yang viable memiliki rentang diameter 12—14 µm. Hasil penelitian menunjukkan tiap variasi konsentrasi minyak esensial akar wangi memiliki efek yang tidak signifikan terhadap viabilitas sel HeLa. Namun, minyak esensial akar wangi 15 µg/mL dan 20 µg/mL memiliki kecenderungan paling besar dalam menurunkan viabilitas sel HeLa berdasarkan hasil uji viabilitas dengan WST-1 dan Scepter cell counter. Kesimpulan dari penelitian adalah minyak esensial akar wangi tidak memberikan pengaruh yang signifikan terhadap viabilitas sel HeLa, akan tetapi terdapat konsentrasi tertentu yang memiliki kecenderungan dalam menurunkan viabilitas sel HeLa, yaitu konsentrasi 15 µg/mL dan 20 µg/mL.

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Cervical cancer is the cancer with the second highest number of cases in Indonesia. The large number of cancer cases in Indonesia as well as cases of death due to cancer make it necessary to develop drugs to cure cancer. Existing treatments are considered quite effective but have several dangerous side effects, so it is also necessary to develop anticancer drugs from natural ingredients such as plant extracts. Vetiver essential oil has anticancer potential, but the effect of vetiver essential oil concentration needs to be studied. The aim of the research was to determine the effect of varying concentrations of vetiver essential oil on HeLa cells. HeLa cells were given four treatments with varying concentrations (5 µg/mL, 10 µg/mL, 15 µg/mL, and 20 µg/mL) of vetiver essential oil and repeated five times. Cell viability was tested using WST-1 and Scepter cell counter. The viability value in the WST-1 method is calculated based on the absorbance value, while the viability value in the Scepter cell counter method is calculated based on the size of the cell diameter. The

higher the absorbance value, the higher the viability value. In terms of diameter, viable HeLa cells have a diameter range of 12—14 µm. The results showed that each variation in vetiver essential oil concentration had an insignificant effect on HeLa cell viability. However, 15 µg/mL and 20 µg/mL vetiver essential oil had the greatest tendency to reduce HeLa cell viability based on the results of viability tests with WST-1 and Scepter cell counter. The conclusion of the research is that vetiver essential oil does not have a significant effect on HeLa cell viability, but there are certain concentrations that have a tendency to reduce HeLa cell viability, namely concentrations of 15 µg/mL and 20 µg/mL.